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The mental verbs "think" and "believe" in authorial evaluative "that" statements: a corpus study of four academic disciplines

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The mental verbs *think* and *believe* in authorial evaluative *that* statements: A corpus study of four academic disciplines

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ABSTRACT

Although students sometimes believe that they must avoid self-mention in making explicit evaluative claims in academic writing, authorial evaluation occurs commonly in that genre, yet the frequency and function of evaluation may differ across disciplines. A wealth of scholarship exists which discusses disciplinary variation in academic writing, some of which has begun to focus on evaluation in particular. However, more detailed studies of particular evaluative features and research into the textual practices of rarely studied academic disciplines are needed to expand present understanding of authorial evaluation in academic writing and its relationship to knowledge construction. The present study addresses these concerns by analyzing the frequency and function of authorial evaluative *that* statements containing the mental verbs *think* and *believe* in a corpus of published academic writing from Applied Linguistics, Composition Studies, Engineering, and Women's Studies. The results showed disciplinary variation in both frequency and function of the structures under consideration and reflect each disciplinary community's preferred and contested mode of knowledge construction. Authorial evaluative *that* statements with the mental verbs *think* and *believe* offer one linguistic option writers may choose to carry out the interpersonal functions of evaluation in ways that are stylistically appropriate to their projects and to the epistemologies of their disciplinary communities.

CHAPTER 1. INTRODUCTION

Students in First-Year Composition courses, as well as students writing in their own academic disciplines, often assume that in order to write effectively for academic audiences, they must remove themselves from their claims, presenting statements as "objectively" as possible. During the past two and a half years spent working with students in First-Year Composition and Women's Studies, I have struggled with how to respond to questions regarding the explicit use of personal evaluation in student writing. First-year students in particular seem most hesitant to introduce the self into writing, even, for example, when reporting on oral history interviews, research which the students themselves co-construct. However, a review of research articles in various disciplines reveals a wide range of authorial presence in serious academic writing.

In fact, a wealth of scholarship addresses the issue of written academic discourse across the disciplines from the perspectives of both Applied Linguistics and Rhetoric. In addressing this issue, many studies have used corpus-based methods, analyzing large collections of authentic texts in order to determine patterns of use that are common to particular types of texts. In addition, many researchers apply theory and methods from Systemic Functional Linguistics, which defines a functional interpretation of text as one that stresses how language is used in a given context to achieve a particular purpose (Halliday, 1985). While much research on authorial stance and academic metadiscourse in particular is broad in scope, several researchers have begun to focus on evaluation in research articles. For example, Hyland and Tse (2005) have examined in detail the use of one particular linguistic structure, evaluative *that*, in a corpus of research article abstracts.

Although a great deal of research has been conducted in the areas of academic disciplinary discourse, metadiscourse, and evaluation in academic writing, further studies are necessary to analyze particular features of the specific structures that writers use to evaluate their claims. Moreover, research is needed of disciplines that have been understudied by linguists, in particular, research communities who have challenged traditional epistemological ideologies both in their research and in their representation of their work. Such research could add a new dimension to the discussion of authorial representation in research writing, drawing on the methodology of what Tognini-Bonelli (2001) calls Corpus-driven Linguistics (CDL).

As Tognini-Bonelli argues, "the essential methodology of CDL is to exercise the researcher's intuition in the presence of as much relevant data as can be assembled" (p. 178). Thus, the purpose of this study was to examine the use of one type of linguistic structure that authors of research articles use to evaluate their claims as evidence of broader attitudes toward the construction of disciplinary knowledge. Building on previous research by focusing on one particular verb process type, mental verbs, which are verbs that "refer to mental states and activities" (Biber, Conrad, and Leech, 2002), this study focused on the use of two particular mental verbs, *think* and *believe*, as they appear in evaluative *that* statements in all sections of the collected research articles. For the purposes of this study, these two mental verbs were examined in the entire text of the collected research articles *as evidence of the way writers present their mental state* when they evaluate their own claims using the evaluative *that* structure. As such, it was anticipated that the frequency and function of these linguistic structures would offer indications of accepted (or contested) disciplinary epistemologies.

The discourse communities under examination included two disciplines commonly studied by applied linguists, Applied Linguistics and Engineering, and two disciplines that applied linguists rarely examine, Composition Studies and Women's Studies. Engineering and Applied Linguistics are frequently studied as examples a "hard" and "soft" discipline respectively. However, Composition Studies, perhaps because of the varied nature of its body of research, has rarely been chosen for such studies, even though its research articles provide principled accounts of research paradigms recognized by professionals in the field. With regard to Women's Studies, in addition to frequently enduring marginalization in academia, its very status as a cohesive discipline has been questioned. However, Buker (2003) argues for the view that Women's Studies is a discipline unto itself, one that "draws from an interdisciplinary knowledge base, a base embodying both social scientific and humanities analytical approaches" (p. 73).

It was hoped that the findings from this study would serve several purposes. First, the findings could provide instructors and students in these disciplines with additional knowledge about how authorial evaluation is conducted at the level of published research writing in their disciplines. Furthermore, it was expected that the results and discussion of this study would contribute to the epistemological debate surrounding subjectivity in research writing, particularly among disciplines which stress the importance of reflexivity on the part of their researchers. Finally, it was hoped that the results of this study would lead to new avenues of inquiry into the relationships between linguistic structures and disciplinary epistemologies.

1.1. Research questions

Based on the goals just stated and drawing on Biber, Conrad and Reppen's (1998) discussion of common research questions used to investigate lexicogrammatical issues and their discussion of approaches to studying discourse characteristics, the following research questions guided the analysis:

Research Question 1

a) With what frequency do writers use the mental verbs *think* and *believe* in authorial evaluative *that* statements in a corpus of research articles from Applied Linguistics, Composition Studies, Engineering, and Women's Studies?

b) Which subjects commonly collocate with these verbs?

Research Question 2

a) What patterns of variation appear within and across the disciplines with regard to source of evaluation, evaluated entity, and context?

b) What might variation in frequency and function suggest about knowledge production in each discipline?

In order to provide background to the discussion of this study, Chapter Two, Literature Review, will review theory and research relevant to the present study and provide definitions of the terms that have been mentioned in this introduction. Chapter Three, Methodology, will provide a detailed explanation of the methods that were used to address these research questions. Chapter Four will discuss in detail the results of this research in terms of frequency and function and the relationship of these findings to disciplinary epistemologies. Finally, Chapter Five will briefly summarize the results and will discuss the

limitations of this study, suggest the pedagogical implications of the results, and propose suggestions for further research.

CHAPTER 2. LITERATURE REVIEW

As Bazerman (1994) reminds us, "every research discipline produces a literature that proposes, evaluates, and codifies its knowledge" (p. 81). While it is often assumed that writing in the "hard" disciplines exhibits little authorial intrusion, purporting to uncover knowledge as objective fact and appearing to take no position in relation to their findings, it is likewise understood that writers in the so-called "soft" disciplines often deliberately position themselves personally in their texts. Yet as researchers in linguistics and rhetoric have observed, published academics across the disciplines, both in the "hard" disciplines, such as Chemistry, Biology, and Engineering, which may be said to investigate the natural world, and the "soft" disciplines, such as Sociology, English, and Business Studies, which concern themselves with the social, employ strategies that overtly or implicitly use what has been called *stance* or *metadiscourse* to express positions (Hyland and Tse, 2004). One common form of metadiscourse is *evaluation*. Defined by Thompson and Hunston (2000) as "the broad cover term for the expression of the speaker or writer's attitude or stance towards, viewpoint on, or feelings about the entities or propositions that he or she is talking about" (p. 5), evaluation in academic writing has provided considerable ground for exploration for language researchers.

A wealth of recent scholarship in both Applied Linguistics and Rhetoric, Composition, and Professional Communication concerns itself with disciplinary discourse, metadiscourse, and, specifically, evaluation on the part of the author/researcher. To review all of the related literature on these three subjects is beyond the scope of this chapter. However, a clearly focused review of the most recent work in these areas that is relevant to

this study is useful for situating the present study within its theoretical and research context. To this end, the following sections will address germane scholarship in academic disciplinary discourse, review relevant theory and research on metadiscourse in academic writing, and discuss recent literature and studies which focus specifically on authorial evaluation in the sense that Thompson and Hunston (2000) describe.

2.1. Theory and research of academic disciplinary discourse

Researchers study disciplinary discourses with varied purposes, from understanding disciplinary language so that we can teach students how to participate more effectively in academia (Carpenter and Krest, 2001), to understanding the values and ideologies of disciplinary communities. Addressing the question of disciplinary ideologies, Bazerman (1994) claims that disciplines are in fact constantly negotiated "discourse systems" (p. 104) worthy of careful study. The predominant research site for inquiries into disciplinary discourse is academic text. Haas (1994) notes that "at the college level, to become literate is in many ways to learn the patterns of knowing about, and behaving toward, texts within a disciplinary field" (p. 43). Bazerman (1994) suggests that, "rhetorical analysis of the actual communications of the disciplines opens up and makes more visible these suppressed issues of the dynamics and evolving knowledge production of the disciplines" (p. 75). Arguing for an emphasis on text, Bazerman posits the following:

> Linguistic and rhetorical studies of disciplinary language begin, but do not end, with the observation that the primary product of most disciplines, and a secondary product of all, are published texts, which are taken to constitute the knowledge of the disciplines. Thus, study of the language and rhetorical action of these texts helps us understand both the process and product of disciplinary work. (p. 104)

Thus, academic texts have for decades been increasingly seen as artifacts of the *discourse communities* which produce them. Several theorists and researchers discuss and define the discourse community in order to understand disciplinary communication as well as to develop a useful theory of communication as a social practice (Herzberg, 1986; Zappen, 1989; Swales, 1990; Bizzell, 1992). Bizzell (1992) proposes a "tentative" but concise definition of the discourse community as "a group of people who share certain language using practices" (p. 222). Elaborating on her definition, she invokes Herzberg's conception that the discourse community is at the "center of a set of ideas...that language use in a group is a form of social behavior...a means of maintaining and extending the group's knowledge and of initiating newcomers...[, and] epistemic or constitutive of the group's knowledge" (Herzberg quoted in Bizzel, 1992, p. 223).

In his examination of the notion of the discourse community, Zappen (1989) explores both institutional and social views of discourse. Zappen proposes that if we seek to understand communication more thoroughly, we should study the communication practices of institutions. Swales (1990), too, discusses the concepts of discourse community with regard to institutional practices, considering in particular the power of academic journals to shape the work that is published within academic communities. Scollon (1994) continues this discussion on the centrality of scholarly journals to academic discourse communities, claiming that the writing that appears in journals is changing:

> Two dimensions along which changes have taken place are the construction of the person of the author and the construction of scientific and academic fact. Authorship and fact, taken together, present to the reader a stance or a position of responsibility which is being taken by the writer. *From the way writers construct the authorial self and from the way they present their facts, readers construct a judgment about the extent to which authors are ready to stand by*

> *their words and about the ideological positions they are taking.* (p. 33; emphasis added)

Yet across the disciplines, the ways in which writers construct the authorial self and present their facts seem to vary at the level of diction, which reflects disciplinary variations at the epistemic level. Moreover, this variation in the language used to express authorial stance may depend in part on disciplinary conventions, or on what a particular academic community finds persuasive. Winsor (1993) reminds us that comparisons across disciplines reveal readily apparent differences, notably in whether authors represent themselves in their texts or emphasize data, as she discusses in the following passage:

> When people compare scholarly writing in science and in the humanities, they tend to see these two ways of writing knowledge as more different than similar. Most obviously, *scientific texts deliberately devalue the individual interpretations and sensitivities that many other kinds of writing exhibit, especially academic writing in the humanities.* Thus readers are struck by the highly technical vocabulary, impersonal tone, and heavy emphasis on data found in scientific prose. (p. 127; emphasis added)

With regard to scientific prose, Hyland (1999) argues that "the suppression of personal agency is...often considered to be a means of concealing the social constructedness of accounts in academic writing" (p. 117). Yet regardless of the textual differences present in writing across the disciplines, even in the sciences, "the social construction of scientific knowledge has been an increasingly accepted notion among philosophers, sociologists, historians of science, and scientists themselves" (Kuhn paraphrased in Winsor, 1993, p. 128). In his 1999 article "Disciplinary discourses," Hyland elaborates on this notion, claiming that writing is no longer seen through the "windowpane theory" of language, but is seen as a creative and social act (p. 100). He expands on this concept of language, describing it in the following way:

> Academic writing has therefore been seen as the use of various devices to enhance persuasiveness, drawing on either a rhetoric of impersonal objectivity, or one of reflexive awareness, to appropriately frame disciplinary submissions...Textual meanings, in other words, are socially mediated, influenced by the communities to which writers and readers belong. (p. 100)

Research communities in the sciences, social sciences, and humanities are marked by differences in methodology and representation, and these differences are sure to evince themselves in the text of research articles in these disciplines. Bazerman (1988) goes so far as to suggest that "the underlying epistemology, history, and theory of a field cannot be separated from its rhetoric" (p. 323). In the same vein, Berkenkotter and Huckin's (1995) extensive research on discourse communities highlights the importance of genre in academic writing. Referring to Swales' seminal work on genre, they maintain that the forms that a community produces are owned by the community, not the individual (Swales, 1990, paraphrased in Berkenkotter and Huckin, 1995, p. 18). In this way, academic genres "function to instantiate the norms, values, epistemologies, and ideological assumptions of academic cultures" (p. 22). Thus Berkenkotter and Huckin foreground the relationships between "textual practices" and "the beliefs and value systems of the disciplinary cultures" in which they arise (p. 22), arguing that genre conventions "signal a discourse community's norms, epistemology, ideology, and social ontology" (p. 3). They claim that "research in composition studies and discourse analysis supports our view that studying the genres of professional and disciplinary communication provides important information about the textual dynamics of discourse communities" (p. 3). However, as Bazerman (1988) cautions, genre forms at the textual level are not static entities, but are constantly negotiated, even when institutions attempt to enact and maintain some form of genre standardization (p. 318).

2.2. Stance *and* metadiscourse *in academic writing*

Given the rich body of work concerning academic disciplinary discourse, researchers find extensive opportunities to examine particular aspects of language use across disciplines. One such area of interest is known as *stance*, or *metadiscourse*. Stance is defined by Biber, Johansson, Leech, Conrad, and Finegan (1999) as the expression of "personal feelings, attitudes, value judgments, or assessments" (p. 966). Research has shown that the characteristics and uses of stance devices vary. One type of stance device relative to the present study marks *epistemic stance*, which can be used to convey "certainty (or doubt), actuality, precision, or limitation; or...indicate the source of knowledge or the perspective from which the information is given" (Biber et. al., 1999, p. 971-2).

Although stance and metadiscourse are sometimes used interchangeably, stance may be understood to encompass the construct of metadiscourse (Precht, 2000). VandeKopple (1985) offers a useful taxonomy for thinking about metadiscourse in particular, which he divides into seven types: "text connectives, code glosses, illocution markers, validity markers, narrators, attitude markers, and commentary" (p. 85). Defined by Hyland and Tse (2005) as "the linguistic resources used by academic writers to adopt a position and engage with readers" (p. 1), metadiscourse has been shown to occur across academic disciplines, but often in differing ways.

Several studies employing corpus-based methods and drawing on rhetorical theory have contributed to an understanding of metadiscourse in academic writing. Often such research combines quantitative and qualitative methods and may be described as performing "content analysis." Content analysis is defined by Huckin (2004) as "the identifying, quantifying, and analyzing of specific words, phrases, concepts, or other observable semantic

data in a text or body of texts with the aim of uncovering some underlying thematic or rhetorical pattern running through these texts" (p. 14). For example, particular studies may emphasize the role of metadiscourse in constructing authorial identity (Hyland, 2001) or facilitating the relationship between writer and reader (Hewings and Hewings, 2002).

Challenging the notion that professional scientific writing is devoid of authorial presence, Crismore and Farnsworth (1990), in their study of professional and popular scientific discourse, ground their work in Vande Kopple's explorations of metadiscourse (1985). In doing so, they examine features of metadiscourse, by their definition, "the linguistic and rhetorical manifestation of an author's presence in a text" (p. 118), in two articles, one popular and one professional, written on the same subject in the field of biology. The authors conclude that even science writing exhibits personal intervention, but the form and function of this intervention tends to vary. For example, linguistic items such as first, second and third person pronouns can operate subjectively, in the case of "I think," interpersonally, in the case of "We can assume," and objectively, as in, "It may be said" (122-3).

Similarly, several studies examine particular linguistic structures and their relationship to the purpose of the text. One example relevant to the present study is reported by Herriman (2000), who reports her findings that "extraposition does vary in different types of English texts and this variation reflects the degree to which its functional properties satisfy the communicative purpose of the text" (p. 225). Herriman further notes that "extraposition provides writers with a means of avoiding subjective involvement when making an explicit statement of opinion [and] is used most frequently in expository and procedural types of texts" (p. 225). In addition to Herriman's findings, the recent work of Martínez (2001)

examines "the way in which impersonal constructions, encoded in the transitivity structure, are used in experimental research articles (RA), thus allowing writers to strategically distance themselves from the information they present" (p. 227). Martínez examined the distribution of transitivity structures across sections of research articles, concluding that the use of these structures matched the functions of sections in which they occurred. She notes the "tension between the need to present findings objectively and the need to persuade readers of their validity in the appropriate style" (p. 227). As Martínez asserts:

> The findings of this study indicate that the preference for impersonal constructions may also be the result of strategic choices made by writers that allow them to retreat to the background, to foreground findings, to convey the impersonal and factual character that results from the use of incongruent structures of low negotiability and, ultimately, to create the impression that the facts are speaking for themselves. (p. 242)

Additional research examines metadiscourse across disciplines either explicitly or as a subcategory of stance. For example, in one study on stance in eight disciplines, Hyland (1988) found that "choices of rhetorical strategy depend on relations between participants, and that the writer's stance is at least partially influenced by the social practices of her academic discipline" (p. 99). Hyland suggests that stance frequency shows "that it is central to academic argument, helping to facilitate the social interactions which contribute to knowledge production" (p. 108). Drawing on his extensive work in this area, Hyland (1998) emphasizes that metadiscourse in particular is mediated by academic expectations, noting that "metadiscourse can be seen as reflecting writers' attempts to negotiate academic knowledge in ways that are meaningful and appropriate to a particular disciplinary community" (p. 440).

More specifically, in his 1999 study of stance in 56 research articles from eight disciplines, Hyland found that "writers in the soft disciplines were more likely to indicate the subjectivity of evaluations with the use of verbs such as *believe*, *suspect*, and *suppose*, which conveyed a sense of personal conjecture to the accompanying statement," while writers in engineering and the sciences tended to use modal verbs (p. 116-17). Hyland's findings suggest that the latter structures "allowed writers to distance themselves from their claims through the creation of 'abstract rhetors', which allow agency to be attributed to things" (p. 117). Clearly, Hyland's extensive studies of academic metadiscourse provide a great deal of ground for further exploration of what he calls "interpersonal" devices such as evaluation across the disciplines. Such previous research on disciplinary discourse that recognizes the prevalence and importance of evaluation in academic writing suits the purpose of the present study.

2.3. Evaluation in academic writing

As studies of academic discourse clearly demonstrate, one purpose of metadiscourse for authors is *evaluation*. Thompson and Hunston (2000) acknowledge that evaluation shares similarities with constructs such as stance and metadiscourse, but maintain that the term evaluation is useful because it implies an associated value judgment (p. 5-6). Their taxonomy of the functions of evaluation consists of the following three levels:

> (1) to express the speaker's or writer's opinion, and in doing so to reflect the value system of that person and their community;
> (2) to construct and maintain relations between the speaker or writer and hearer or reader;
> (3) to organize the discourse. (p. 6)

Researchers take a wide range of approaches to the study of evaluation. For example, Channell (2000) uses corpus methods to examine evaluation in particular lexical items, such

as words or expressions, while Thompson and Zhou (2000) take a grammatical and organizational approach to evaluation, examining clause relations to argue that evaluation is central to textual coherence and cohesion. Hunston (2000) explores evaluation in text by examining the relationship between types of evaluation and evaluated entities, while Cortazzi and Jin (2000) extend the site of evaluation beyond text, claiming that, particularly in narrative research, authors evaluate *through* text, meaning that "tellers, hearers, or their situations are evaluated through the telling" (p. 114).

Several studies examine variation in evaluative language across disciplines. For example, although Hyland's 1998 study focused on neither evaluation nor on verb use in particular, he observed that "writers in soft disciplines were more likely to indicate subjectivity [and personal attitude] of evaluations with the use of verbs such as believe, suspect, and suppose" and writers in the "hard disciplines" were more likely to create authorial distance with verbs such as *indicate*, *imply*, and *suggest* (p. 117). Moreover, Stotesbury (2003) observed disciplinary variation in the evaluative language used in research article abstracts. She notes that while research abstracts in the humanities and social sciences tended to exhibit significant evaluative attributes, writers in the natural sciences "more often resorted to modality as a way of expressing authorial stance" (p. 339). Hunston (2000) interprets the form that evaluation takes in scientific texts, arguing that

> ...in a genre such as the experimental research article, where the persuasive nature of the text tends to be hidden behind a veneer of 'objectivity'...the phenomenon of evaluation is relatively simple, because only certain things (e.g. the experimental method, the author's results and conclusions, other researchers' results and conclusions) are evaluated and only in certain ways (e.g. as free from bias, fitting a range of data, applicable to a range of situations). (p. 178)

As evaluation provides ample territory for exploration, researchers have focused more and more on particular evaluative items in order to expand what is known about this linguistic function. More specifically, building on the work of Swales (1990), Hunston and Thompson (2000), Hewings and Hewings (2002), and Stotesbury (2003), Hyland and Tse's (2005) work with evaluative *that* examines this structure in two corpora of abstracts from published writing and students studying English as a second language. Hyland and Tse define the evaluative *that* clause as "a grammatical structure in which a complement clause is embedded in a host super-ordinate clause to complete its construction and to project the writer's attitudes or ideas" (p. 124). The authors claim that evaluative *that* is

> one of the least noticed of these interpersonal features...a powerful construction for expressing evaluative meanings in academic discourse as it allows the writer to thematize the evaluation, making the attitudinal meaning the starting point of the message and the perspective from which the content of the *that*-clause is interpreted...this structure turns such evaluations into an explicit statement of opinion with the potential for elaboration and further discussion. (p. 124)

In their study, Hyland and Tse found that evaluative *that* is a frequently used structure in abstracts that offers an important tool for authors to offer comment and judgment. Among their findings, the authors observed that "by framing evaluations with either a research, cognitive, or discourse verb, writers can implicitly convey whether they intend their judgments to be understood as based on research practices, interpretive practices, or reporting practices" (p. 136).

The issues that have been discussed in this chapter provide a theoretical and research framework for the present study. The reviewed scholarship in academic disciplinary discourse discusses how texts function both to reflect and perhaps even to influence the epistemological ideologies of different academic discourse communities, providing ground

for the examination of how particular textual features reflect knowledge production in the disciplines. In their efforts to communicate knowledge with their academic communities, writers necessarily adopt positions relative to their work and the work of others. The reviewed work on metadiscourse in academic writing addresses how researchers have studied the linguistic techniques that writers across disciplines use to express these positions persuasively to their audiences. One specific function of metadiscourse is evaluation, studied by researchers using various approaches. Most salient to this study, the findings from Hyland and Tse (2005) expand current understanding of a feature known as evaluative *that*. While this study examined several characteristics of evaluative *that* and focused only on research article abstracts, the findings suggested that verb use in evaluative *that* may offer an additional line of inquiry. Thus, this study has generated additional questions about verb use in evaluative *that* statements throughout the entire text of research articles. The present study attempts to address these questions with regard to two mental verbs, and in doing so approaches from a new perspective the question of how one particular feature of metadiscourse may instantiate disciplinary epistemologies.

CHAPTER 3. METHODOLOGY

Academic writers employ a number of techniques in order to express their own attitudes in their texts. This study examines one specific rhetorical strategy, investigating the use of two of the most common mental verbs, *think* and *believe*, within a particular grammatical structure, in order to extend present understanding of how writers use this structure to make evaluations in the text of research articles. In doing so, this investigation also set out to identify and collect highly specific textual evidence which could allow for careful consideration of the possible implications of variation in this type of structure across disciplines for the construction of disciplinary knowledge. It was understood that conclusions based on these findings would identify tendencies within the present texts that may lead to generalizations about knowledge construction in these disciplines. The verbs and patterns, corpus collection methods, and data analysis procedures were determined based on these goals.

3.1. Criteria for selection of verbs and patterns

The present verbs and patterns were chosen because they offer a focused investigation of lexical items that denote mental processes within a clearly defined evaluative structure. Evaluative *that*, according to Biber et. al. (1999), is a post-predicate *that*-clause which allows for broad selection of predicates and may be used with various types of verbs, among them mental verbs. Such clauses most commonly "report the speech, thoughts, attitudes, or emotions of humans" (p. 600). Mental verbs such as *think* and *believe*, like other mental verbs (sometimes called cognitive or cognition verbs), "refer to mental states and activities" (Biber et. al., 2002, p. 107).

The Longman Grammar of Spoken and Written English (LGSWE) (Biber et. al, 1999), the first entirely corpus-based English grammar, reports that *believe* as a single-word lexical verb is found rarely (less than 200 times per one million words) in academic prose, while *think* is found more frequently, at over 300 times per one million words. Frequencies of the common verbs that control *that* clauses also show that *think* is found only slightly more commonly than *believe*. However, both verbs appear controlling *that* clauses fewer than 100 times per one million words in academic prose. By contrast, *think* appears approximately 2,000 times per million words in conversation, 1,000/million in fiction, and 250/million in news. Likewise, *believe* appears fewer than 100 times per million words in conversation, approximately 200/million words in fiction, and 300/millon in news. As the authors note, "academic writers consider it less relevant or appropriate to report personal thoughts, so mental verbs are least common in academic prose" (p. 670). Given that the LGSWE culminated from six years of analysis of a 40 million word corpus, the findings may be said to be consistent with English academic prose in general.

In the 2005 research by Hyland and Tse, evaluative *that* structures attributed to various sources were analyzed in order to gain a comprehensive view of the frequency and function of this structure. In addition to isolating and examining the commonly found verbs *believe* and *that* in order to extend present knowledge about the nature of evaluative *that* statements, this study investigates evaluative *that* statements in which the authors themselves claim the mental processes associated with *think* and *believe*. Additionally, these two verbs were chosen because, in contrast with the mental verb *know*, for example, they suggest a sense of uncertainty (Biber et. al., 666) and as such are especially interesting items to consider with regard to disciplinary epistemologies. Thus, the level of evaluation under

investigation is Thompson and Hunston's first level of evaluation as discussed in Chapter Two, "to express the speaker or writer's opinion, and in doing so reflect the value system of that person and their community" (2000, p. 6). For the purposes of the present study, such statements attributed to the authors of the texts under consideration will be identified as "authorial evaluative *that* statements."

Following Hyland and Tse (2005), cases of zero *that* were excluded from the study. *That* omission occurs in the second of the two sentences that follow:

The writers believe that the results warrant further investigation.

The writers believe the results warrant further investigation.

Both of these example sentences, created for the purpose of explanation in this study, share meaning and reflect accepted grammatical usage (Biber, 1999); However, *that* omission is rare in academic writing (Hyland and Tse, 2004; Biber, 1999; Biber et. al., 1999; Greenbaum, Nelson, & Weitzman, 1996). As a result, cases of *that* omission were excluded.

3.2. Corpus collection

The corpus used in the present study consisted of 1,134,097 words from research articles extracted from well-known journals in four academic disciplines, Applied Linguistics (AL), Composition Studies, (CS), Engineering (EN), and Women's Studies (WS). These four disciplines were chosen because although academic discourse in Applied Linguistics and Engineering are commonly examined in corpus studies, Composition Studies and Women's Studies rarely undergo scrutiny by applied linguists using corpus-based methods. Three of these fields reflect a humanities and/or social science orientation, but Engineering, as a discipline closer to the "hard sciences," contrasts with the other three disciplines in this respect. Moreover, these disciplines are of particular interest to the researcher, who has

studied Applied Linguistics, Composition Studies, and Women's Studies, has taught sections of First-Year Composition and Women's Studies with a large number of students from Engineering, and has perceived differences in writing and writers across these disciplines.

3.2.1 Text selection

Journals were selected based on recommendations from academic experts in each discipline who were explained the purpose of text collection and asked to suggest journals with an online presence which represented the best scholarly writing in their disciplines. Journal issues were then located online and examined in reverse chronological order beginning with the most recent. The table of contents of each journal was examined to eliminate texts that were not suitable for selection. For this study, the genre under examination is the research article. Thus, genres found in academic journals that were not selected included book reviews, abstract theoretical writing, calls for proposals, editors' introductions and poetry.

Given the diversity of research paradigms and written forms within and across these four disciplines, it was necessary to use a definition of research genre that would cover all of the texts under examination while accurately representing research articles in each discipline. As Berkenkotter and Huckin remind us, "genres are intimately linked to a discipline's methodology, and they package information in ways that conform to a discipline's norms, values, and ideology" (1995, p. 1). Bazerman cautions that "the textual features we may associate with any particular genre have no necessarily fixed definition...nor are the textual features that we associate with genre all of the same order" (1988, p. 319).

Given this complexity, Carolyn R. Miller's 1984 article "Genre as Social Action" proved most useful in framing a definition of the genre of the research article that could

apply to disciplines as seemingly disparate as those under scrutiny. In short, Miller argues that "a rhetorically sound definition of genre must be centered not on the substance or the form of discourse but on the action it is used to accomplish" (p. 151). This emphasis on purpose as opposed to form provides a framework especially useful to the present study. In addition, it complements the attention to language function so central to Systemic Functional Linguistics; according to Halliday and Hasan (1989), function should be understood "not just as the use of language but as a fundamental property of language itself" (p. 17).

Under this conception of genre, the genre under investigation, the research article, is defined for the purposes of this study as a principled account of experiential or critical inquiry that authors conducted which is written for the main purpose of sharing the results of their inquiry with the broader academic community. Articles that were included report on research conducted under various paradigms, including quantitative studies, qualitative research such as case studies and ethnographies, and historical and critical studies. In addition, reports of narrative research, defined by Cortazzi and Jin as a process "of eliciting, telling, translating, transcribing, selecting, analyzing, reporting, and...putting it into print" (2000, p. 118) were included, reflecting the growing importance of personal experience in knowledge construction in the humanities and some of the social sciences (Lamb, 1991; Freedman and Frey, 2003).

3.2.2 Corpus collection mechanics

In compiling the corpus, texts from Applied Linguistics and Engineering were selected from the ISU Academic Writing Corpus (Cortes, forthcoming) based on date of publication, beginning with the most recent. The same methods as those used to compile the ISU Corpus were used to select texts from Composition Studies and Women's Studies.

After texts were identified as research articles, they were downloaded from each journal's website and saved in folders by discipline on a private server as Microsoft Word files. Each Word file was labeled using a notation system that would identify the discipline, journal name, volume, issue, and the page number on which the article began (see examples in Appendixes A and B). In this study, examples taken from the corpus will be accompanied by a label as shown in the following example: AL, B6, LLTec00701046. In this case, AL denotes the discipline Applied Linguistics, B6 indicates instance number six of *believe*, the code LLTec stands for the journal Language Learning and Technology, and the numbers represent the volume number (7), issue number (1), and first page number (46). The labeled texts were then cleaned for references to enable a more accurate word count, converted into plain text files, and saved in new folders by discipline. The Word files were retained to allow for subsequent examination of each original file. Finally, a word counting program, WordCount (Cortes, 2005), was used to arrive at a more accurate number of words and files from each journal and in each discipline.

The finalized corpus consisted of 403,944 words from five journals in Applied Linguistics and approximately 250,000 words each from three journals in each of the disciplines of Composition Studies, Engineering, and Women's Studies. The additional journals and texts from Applied Linguistics were included to ensure that the corpus sample would be representative of the discipline. The corpus totals 1,134,097 words from 145 texts dating from 1999 to 2004, with the majority of the texts dating from 2002-2004. The completed corpus is described in Table 3.1 below.

Table 3.1
Corpus description

Discipline	Name of journal	# of papers	# of words
Applied Linguistics	*Journal of Applied Linguistics*	5	51,587
	TESOL Quarterly	11	111,795
	English for Specific Purposes	11	79,142
	Linguistics in Education	9	94,092
	Language Learning and Technology	7	67,328
Subtotal		43	403,944
Composition Studies	*Computers & Composition*	12	82,288
	College Composition & Communication	9	82,447
	Pedagogy	11	83,767
Subtotal		32	248,509
Engineering	*Journal of Geotechnical & Geoenvironmental Engineering*	14	88,370
	Journal of Materials in Civil Engineering	15	73,061
	Journal of Transportation Engineering	12	73,081
Subtotal		41	234,512
Women's Studies	*Feminist Studies*	9	86,453
	National Women's Studies Association Journal	11	82,465
	SIGNS	9	78,214
Subtotal		29	247,132
Totals		145	1,134,097

3.3. Data analysis procedures

Data analysis consisted of a combination of quantitative and qualitative methods. First, corpus-based methods were used to identify and to determine the frequency of evaluative *that* statements using *believe* and *think* and to determine the lexical items that collocated with these structures in the subject position. Based on these quantitative findings, qualitative methods were than used to address the function of the linguistic items under consideration and to speculate on how the findings may reflect attitudes toward the construction of disciplinary knowledge in these fields.

3.3.1. Quantitative analysis

In completing the first phase of analysis, the disciplines were searched individually using a concordancing program, MonoConcPro (Barlow, 2002). Searches were conducted for all verb forms of *believe that*, and the process was repeated for all forms of *think that*.

Figure 3.1 below illustrates the returned instances of *believe that* as displayed in MonoConcPro.

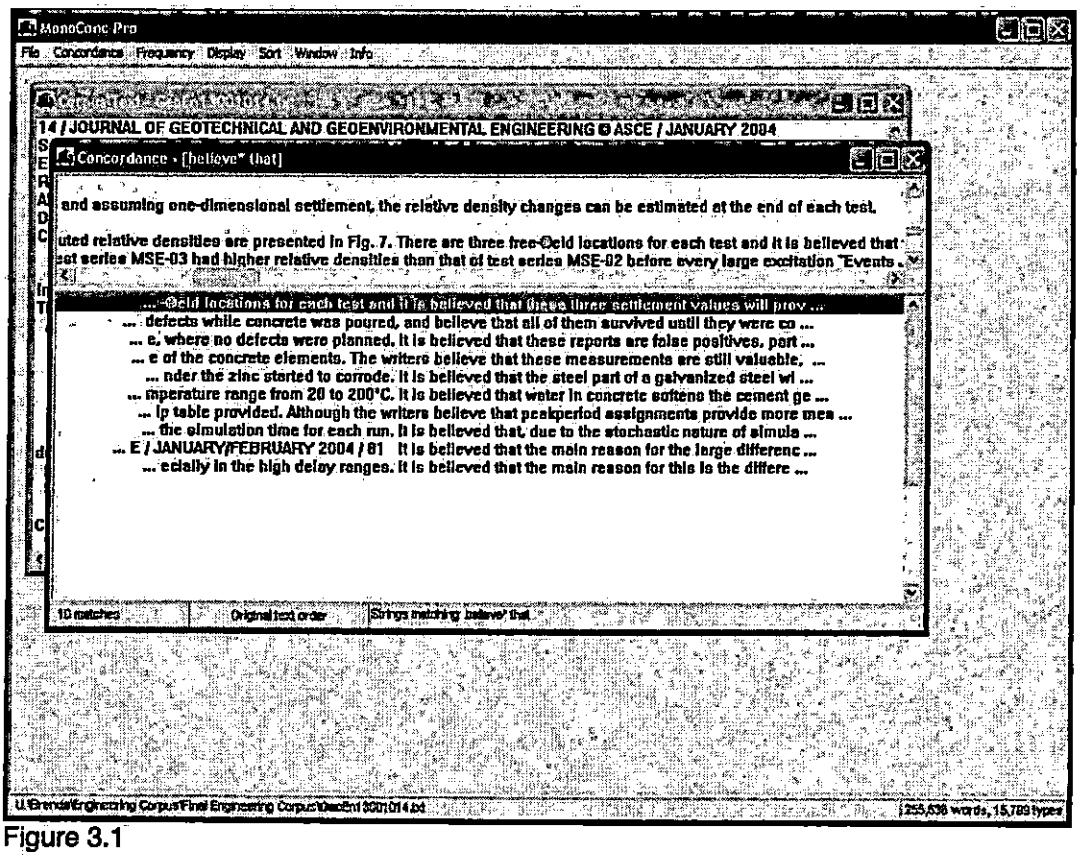

Figure 3.1
Image of concordancing program

The concordances which were elicited were then printed and carefully reviewed, and all instances of authorial evaluative *that* statements were located by label in the original Word files and copied and pasted into separate Microsoft Word documents by discipline (see Appendixes A and B). Several of the returned concordances were eliminated because the sentences were not attributable to the author of the report, as was the case in several texts from Composition Studies and Applied Linguistics, which often included quotes from research participants. For example, one researcher's data, which was elicited from online discussions of graduate students, yielded the following quote:

I think that Butler has a handle on this issue within the frame of the illocutionary act. (CS, C&C021030295)

The eliminated data were then classified by source of evaluation and fell under the following source categories: research participants (*students believe that*), other writers or researchers (*Coosner thinks that*), and social or abstract entities (*advocates believe that*).

The remaining instances were reviewed to record frequency and subject collocates, and the findings were recorded along with the number of texts in which these structures appeared as well as the number of journals in which they appeared. Because the four disciplinary corpora contained differing numbers of words, the data were normalized to one million words to achieve a more accurate comparison. As described by Biber, Conrad and Reppen (1998), normalization allows researchers to "adjust raw frequency counts from texts of different lengths so that they can be compared accurately" (p. 263). The following formula was used to normalize to one million words:

(raw frequency/total # of words) x one million

3.3.2. Qualitative analysis

To complete the next phase of data analysis, the sentences were reviewed individually and examined in the context of the original word files to examine how writers cast themselves as evaluators, the entities that were evaluated, and the context of the article in which these instances appeared. The linguistic items under scrutiny were copied and pasted into tables to facilitate comparison. Sentence subjects were identified, counted, and examined manually to investigate the source of the evaluation. In examining evaluated entities, the patterns and categories that Hyland and Tse (2005) observed were then taken into consideration, including "the author's evaluation of their own findings; their evaluation

of previous studies; their statement of research goals; and evaluation of the methods, models, or theories they had drawn on in the research" (p. 125). In order to determine context, the original text was examined, and article headings were used to help identify the sections of the articles in which these statements occurred. Often the instances were found under a clear heading, such as "introduction," "results and discussion," or "conclusion." However, when article headings were not available, the entire text was scanned and the section of the text in which the instance occurred was read carefully to determine the function of the section in which it appeared. Then, a decision was made to classify the instance by section. If for example, the instance occurred in the last two or three paragraphs, it could reasonably be classified as occurring in the conclusion of the article.

Finally, the percentages of texts in each discipline in which the data occurred were determined in order to discern whether clear disciplinary differences would appear. The findings were interpreted in light of current theories of academic and professional discourse in order to speculate on the significance of variation in use of these structures across disciplines. In particular, the results were considered along two lines, authorial representation, ranging from explicit to implicit, and uncertainty avoidance, from low to high. For example, explicit authorial representation would involve the frequent use of personal pronouns to refer to the author him or herself, while implicit authorial representation may involve the use of depersonalized nouns or other structures to refer to the author or rare authorial referencing. Likewise, low uncertainty avoidance may be seen in the frequent use of the structures under consideration, while high uncertainty avoidance may be suggested if these structures are used rarely. Figure 3.2 below offers a visual representation of this framework:

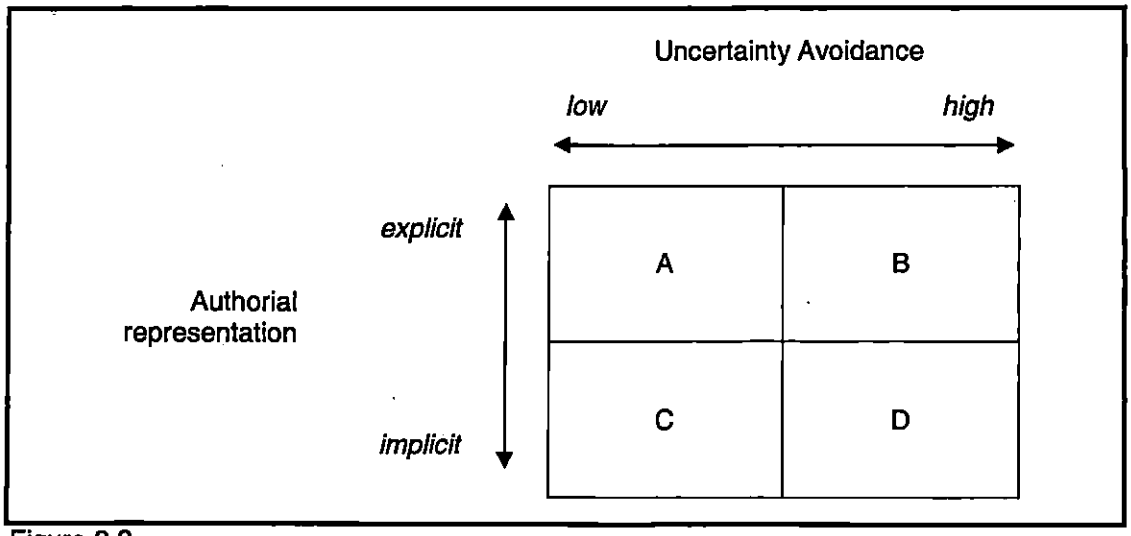

Figure 3.2
Interpretive framework

This framework was developed for the present study after careful consideration of the implications of the results of the quantitative and functional analyses. The quadrants of Figure 3.2 represent relationships between a continuum of authorial representation and a continuum of uncertainty avoidance and are, of necessity, simplified for the purpose of analysis. As such, this representation provided a framework useful for interpreting the results with regard to uncertainty avoidance, as suggested by the frequencies of the structures under consideration, and authorial representation, to be determined by the functional analysis of the results. Quadrants A through D represent not discrete units but a framework for considering specific trends across disciplines and their implications for the construction of disciplinary knowledge.

CHAPTER 4. RESULTS AND DISCUSSION

In the first phase of analysis, quantitative methods were used to determine whether differences could be found across the disciplines in the use of *believe* and *think* in authorial evaluative *that* statements. The data were analyzed using corpus based methods to determine the frequency of these structures and the most frequent subject collocates preceding these verbs. The second phase of analysis involved the use of functional analysis to examine authorial representation, evaluated entities, and the context in which the structures in question occurred. Finally, qualitative methods were used to consider the findings of frequency and authorial representation with regard to the construction of disciplinary knowledge. This chapter addresses the frequency of linguistic features, subject collocates with *believe* and *think*, variation in the sources of evaluation, evaluated entities, and contexts, and the relationship between frequency and function and knowledge production in the disciplines.

4.1. Frequency of linguistic features

It was anticipated that while Composition Studies and Women's Studies would likely display the highest frequencies, Applied Linguistics would exhibit lower frequencies, and Engineering would show little or no use of *think* or *believe* in the evaluative *that* statements attributed to the authors of these texts. This was expected because of assumed differences in discourse norms in these disciplines ranging from explicitly personal to outwardly detached. The subsections that follow give the detailed results across disciplines of the total frequencies of *believe* and *think* and the individual results for each verb.

4.1.1. Total Frequencies

Table 4.1 below illustrates both the normalized frequencies of each verb and provides the total frequencies of the two verbs together by discipline.

Table 4.1
Frequencies

	Applied Linguistics	Composition Studies	Engineering	Women's Studies
believe	22.28	72.43	34.10	28.32
think	--	24.14	8.53	16.19
Total	22.28	96.57	42.61	44.51

As was expected, the Composition Studies texts exhibited the highest normalized frequency for these two mental verbs at 96.57 instances per one million words. Unexpectedly, Women's Studies and Engineering were remarkably close in frequency, with 44.51 and 42.61 instances respectively. Applied Linguistics exhibited the smallest number of these mental verbs at 22.28 instances per million. Figure 4.1 below offers a visual representation of the clear differences in disciplinary use of these verbs.

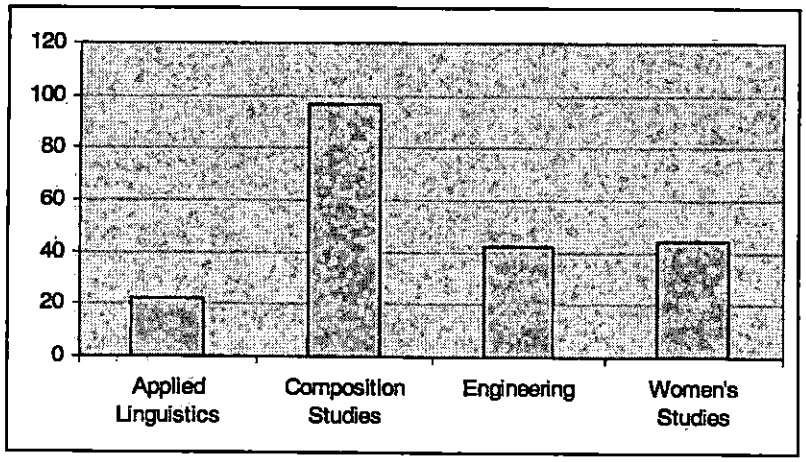

Figure 4.1
Total normalized frequencies of *believe* and *think* by discipline

The findings that these verbs appeared fewer than 100 times per million words match the findings reported in the LGSWE discussions of verbs controlling *that* clauses in academic

prose. Moreover, it may be inferred that a large percentage of the instances of *think* and an even larger percentage of the instances of *believe* as single-word lexical verbs control authorial evaluative *that* statements.

4.1.2. Frequencies of "believe"

As shown in Table 4.2 below, the frequencies for *believe* across disciplines follow a pattern similar to those of the total frequencies for both verbs. This is likely due to the high frequency of *believe* as compared with *think*, which strongly influences the total frequencies. Among these texts, Composition Studies shows the highest number of instances of *believe*, exhibiting this structure over three times as often as the texts from Applied Linguistics and nearly three times as often as those in Women's Studies. Surprisingly, Engineering shows the second highest frequency of *believe*, but among the raw number of texts, this item appears less than half as often as in Composition Studies.

Table 4.2
Frequency of *believe*

	Frequency	# of texts
Applied Linguistics	22.28	7
Composition Studies	72.43	13
Engineering	34.10	6
Women's Studies	28.32	2

Of special interest is the number of texts in which these instances were found. The raw frequency of *believe* in Women's Studies was seven, with one instance occurring in one text and six instances occurring entirely in the second text. In contrast, in all three of the other disciplines, the raw frequencies correspond much more closely with the number of texts in which this structure was found. The large difference observed in Women's Studies is likely due to the author's highly personal style and autobiographical purpose in that particular Women's Studies text, which showed an unusually high frequency of the structure

"I believe that...". It is important to note that this case is extreme even among other autobiographical writing represented in this corpus in Women's Studies and Composition Studies. In this case, perhaps the author's highly reflexive approach, as well as the personal nature of his narrative, may have contributes to these findings. However, two of the autobiographical texts from Composition Studies also show a tendency toward more frequent use of this structure than other texts from that collection. In addition to the author's idiosyncrasies, the personal style and choices of the editors of these journals may have contributed to these findings as well.

4.1.3. Frequencies of "think"

As Figure 4.2 illustrates, *think* appeared less frequently in all disciplines in authorial evaluative *that* statements relative to *believe*, appearing far less frequently in Composition Studies and Engineering, nearly half as frequently in Women's Studies, and not appearing at all in Applied Linguistics. For the sake of comparison, according to the Longman Grammar of Spoken and Written English, in academic prose, *think* and *believe* both appear fewer than 100 times per one million words controlling complement *that* clauses.

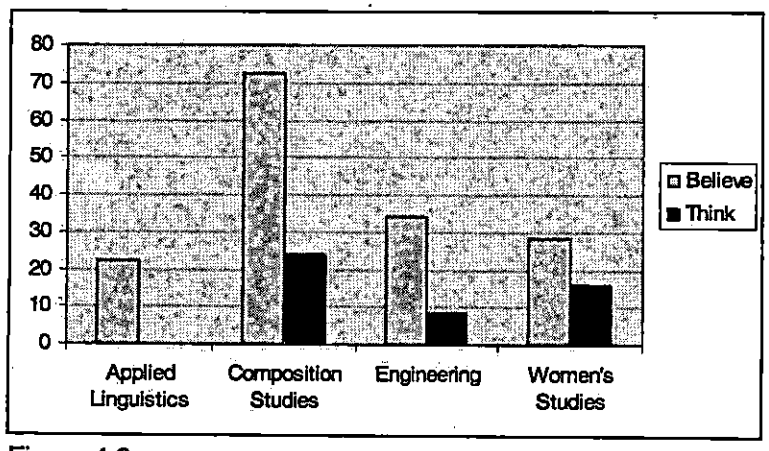

Figure 4.2
Comparison of *believe* and *think* by discipline

Again, the texts represented in the Composition Studies corpus exhibit the highest frequency of this mental verb in authorial evaluative *that* statements at 24.14 per one million words. However, in this case, the frequency of *think* in Women's Studies (16.19) nearly doubles that of Engineering (8.53). With such low frequencies, *think* may be said to occur rarely in both disciplines. Interestingly, no instances of *think* appeared in the texts that were analyzed from Applied Linguistics. Table 4.2 below displays the normalized frequencies of *think* along with the raw number of texts in which this item was found across these disciplines.

Table 4.3
Frequency of *think* in texts

	Frequency	# of texts
Applied Linguistics	--	--
Composition Studies	24.14	5
Engineering	8.53	1
Women's Studies	16.19	2

The number of texts in which *think* was found is generally consistent with the number of instances in Composition Studies and Women's Studies. In Engineering, however, the raw frequency for *think* was only two instances, with both items appearing in the same text. It is important to note that the author's idiosyncrasies, that is, the personal style and preferences of the individual writer, may lead to choices that are uncommon among writers of research articles in Engineering.

4.2. Subject collocates for "believe" *and* "think"

It was speculated that "I" and "we" would appear more frequently with both *believe* and *think* in Composition Studies and Women's Studies. Personal pronouns were expected to be found occasionally in Applied Linguistics but were not expected to appear in Engineering. It was further expected that some authors, particularly in Engineering, would

use means other than personal pronouns, such as "it," to make their own evaluative *that* statements using these *think* and *believe*. It seemed unlikely that such a detached stance would appear in Composition Studies, in particular, but it was suspected that a such distance may appear in Women's Studies or Applied Linguistics. All subject collocates that anticipate *believe* and *think* in authorial evaluative *that* statements are discussed in detail in the following sections.

4.2.1. Subject collocates of "believe"

Table 4.4 shows of all of the words that appeared in active super-ordinate clauses with *believe* across these four disciplines.

Table 4.4
Collocates for *believe* in active sentences

	I (me)	we	the writers
Applied Linguistics	4.9	12.3	--
Composition Studies	60.3 (4)	8	--
Engineering	--	4.2	8.5
Women's Studies	28.3	--	--

The personal pronoun "I" is by far the most frequent subject collocate with *believe* in these texts. In Composition Studies and Women's Studies, the collected evaluative *that* statements appear only in active voice, and only personal pronouns appear with *believe*. In Applied Linguistics, all subject collocates in active sentences are personal pronouns. In the Engineering texts, however, the personal pronoun "I" never appears, as was anticipated. "We" appears with active voice in Engineering; however, it appears in a compound sentence which exhibits the deletion of the second subject, perhaps reflecting that restatement of old information is unnecessary, as may occasionally occur in academic writing (Weissberg and Buker, 1990, p. 34). While the noun phrase "the writers" appears in Engineering, it appears in none of the other texts.

Interestingly, several examples display subject avoidance through the use of passive structures and the subject placeholder, "it." Table 4.5 below gives the disciplines and frequencies in which subject avoidance occurred in this way.

Table 4.5
Believe with passive voice

Discipline	it
Applied Linguistics	4.9
Composition Studies	--
Engineering	21.3
Women's Studies	--

The following examples from Engineering demonstrate subject avoidance:

> *There are three free-held locations for each test and it is believed that these three settlement values will provide a bound for the relative densities.* (EN, B1, GeoEn13001014)

> *It is believed that these reports are false positives, particularly considering that poor quality concrete was reported by various participants at differing locations.* (EN, B3, GeoEn129121128)

4.2.2. *Subject collocates of* think

Table 4.6 below gives the raw counts of the collocates that preceded *think.*

Table 4.6
Collocates for *think* in active sentences

Discipline	I	many of us
Applied Linguistics	--	--
Composition Studies	24.1	--
Engineering	--	--
Women's Studies	12.1	4

As with *believe*, in Composition Studies and Women's Studies, the personal pronoun "I" was by far the most common collocate with *think.* The authors of the Composition Studies texts make use of "I" entirely, while in Women's Studies, the word combination "many of us" appears in the following sentence, in which the authors seem to implicate themselves as part of a community in the evaluation:

Our foremothers presented equity as a primary goal, and many of us continue to think that equity for women is fundamental even as we work to factor gender considerations about real-life circumstances of women (especially family care) into the discussion (Davis 1996). (WS, T1, NWSAJ0160101)

Similar to how they used structures with *believe*, writers in Engineering avoided use of the personalized subject with *think* entirely by using the subject placeholder "it" in passive structures, as Table 4.7 below illustrates:

Table 4.7
Think with passive voice

	it
Applied Linguistics	--
Composition Studies	--
Engineering	8.5
Women's Studies	--

The following sentence from Engineering typifies this depersonalized structure:

It is thought that, as the water existing on the surface of specimen S was very thin and had a weak electrolyte property, the remaining zinc could not produce the sacrificial effect and could not protect the steel beneath the zinc. (EN, T2, MatEn01601001)

Finally, *think* occasionally appears separated from its subject, as in this example from Composition Studies:

After reading Tate's narrative, and others like it, I actually began to think that my life as a non-gifted academic wasn't so bad after all. (CS, T1, CCC0560194)

Again, Applied Linguistics displayed no instances of *think* in this type of structure that could be attributed to the author(s).

4.3. Variation in source of evaluation, evaluated entity, and context

It was anticipated that the data would prove similar to Hyland and Tse's (2005) findings of evaluation in research article abstracts. However, it was also expected that since this study examines entire texts and includes two disciplines that were not examined by Hyland and Tse, the results may differ from their categories somewhat. Specifically, writers

in Composition Studies and Women's Studies may be assumed to position themselves frequently and explicitly in their texts to evaluate individuals or groups of people. Finally, it was speculated that these statements would likely appear in discussions of results and conclusions.

4.3.1. Believe: source, evaluated entity, and context

Table 4.4 above shows that while the source of the evaluation is always the author, authors use differing linguistic techniques to claim their evaluations. Composition Studies and Women's Studies revealed an overwhelming propensity for explicitly acknowledging the self (or selves) as the source of evaluation. Applied Linguistics shares this tendency when such structures are used; however, two instances of depersonalized passive structures using "it" as the subject placeholder are observed, both in the journal *Language Learning and Technology*, shown in the examples below:

> *Given that the experimental subjects had an ample opportunity to manipulate the target words and thus create a strong link between form and meaning, it was believed that they would retain the new vocabulary items better than the control group.* (AL, B6, LLTec00601100)

> *It was believed that the aggregate of scores for several items would be more reliable than an individual's score for a single item.* (AL, B8, LLTec00701046)

It is important to note that this journal elicited one instance of *I believe that* as well.

Finally, Engineering exhibited rare explicit references to the personalized self, yet the use of the somewhat distant noun "The writers" was observed.

Table 4.8 below adapts Hyland and Tse's categories to the outcomes of this study with regard to evaluated entity for the verb *believe*. The frequencies shown have been normalized to one million words.

Table 4.8
Believe:
Evaluated entities

	Methods, models, theories	Materials, data, outcomes	Participants, students	Previous studies, goals
Applied Linguistics	9.9	9.9	2.4	--
Composition Studies	40.2	8	12	12
Engineering	8.5	25.5	--	--
Women's Studies	12.1	--	12.1	--

Clearly, the authors of the texts generally chose to evaluate methods, models, and theories most frequently. In Engineering, however, materials, data, and outcomes are evaluated three times as often as methods, models, and theories. As was expected, authors in Composition Studies and Women's Studies often evaluated human participants and students, but authors in Composition Studies most often evaluated methods, models, and theories at 40.2 times per one million words. Applied Linguistics reveals rare instances of evaluation of human participants using these structures. The following examples show authors evaluating methods, models and theories:

> *We believe that a textlinguistic approach to the computerized analysis of corpora, as advocated by Biber, Conrad, and Reppen and Flowerdew (1998), is not only desirable but can be quite fruitful, particularly with specialized, genre-specific corpora.* (AL, B1, ESP2004313)

> *I believe that those same intelligent principles of design methodology are significant still.* (CS, B1, C&C210105)

> *It is believed that, due to the stochastic nature of simulation models, one simulation run may produce significantly different results, depending of the random number of seeds used.* (EN, B8, TranE13001068)

> *Although the consequent explosion in experimental ethnography is laudable, I believe that the emphasis on the ways in which "authority" is an effect of certain textual conventions messes Said's main point about the ways power produces truth and subjects.* (WS, B3, SIGNS0290401041)

Likewise, the examples below demonstrate evaluation of materials, data, and outcomes:

> *We believe that this result is related to the readers' familiarity with the organizational type and their identification of that type.* (AL, B4, ESP2101081)

> *We believe that the classroom space opened by rupture might serve as a transitional space.* (CS, B16, PED04020261)

> *It is believed that these reports are false positives, particularly considering that poor quality concrete was reported by various participants at differing locations.* (EN, B3, GeoEn129121128)

The following sentences illustrate evaluation of students or participants:

> *Given that the experimental subjects had an ample opportunity to manipulate the target words and thus create a strong link between form and meaning, it was believed that they would retain the new vocabulary items better than the control group.* (AL, B6, LLTec00601100)

> *I do not believe that if my students understood what discourses like PC obscure from view and the implications they hold for their lives they would easily embrace them.* (CS, B14, PED04020191)

> *I believe that it is this ability to confound that characterizes Magdalena's power as it manifested itself in her ability to combine physical intimacy with a refusal to "participate in the process of analysis" (see n. 22), her ability to hold onto secrets even as she was taking off her clothing.* (WS, B7, NWSAJ016020138)

And finally, this sentence from Composition Studies demonstrates evaluation of previous studies or goals:

> *I believe that Delphit is right.* (CS, B8, CCC055040693)

Finally, the question of context was addressed, but, as was discussed in Chapter 3, not all of the texts analyzed followed the patterns of the traditional research article. Thus, it became necessary to carefully consider the function of the sentence which was analyzed and the section in which it appeared in order to assess context. Generally, however, it seems safe to say that authorial evaluative *that* statements using *think* and *believe* were used most frequently when writers were discussing and interpreting their results or experiences and

drawing conclusions about their work or experiences, especially in relation to the larger projects of their disciplines. Of the following four examples, the first two appeared in discussions of results, while the last two appeared as part of or directly before concluding paragraphs:

> *It was believed that the aggregate of scores for several items would be more reliable than an individual's score for a single item.* (AL, B8, LLTec00701046)

> *Of course the hiring committee and I would have been mistaken to believe that my presence alone would dissolve excuses for why it couldn't be done, why other black males from the ghetto can't do well in school.* (CS, B6, CCC055040693)

> *Although the writers believe that peakperiod assignments provide more meaningful results for both evaluation and design, the findings of this case study should be applicable to both hourly and daily assignments.* (EN, B7, TranE13001049)

> *But I believe that most of the students who were aware that their professional school difficulties originated in their very self-identities tended to be so alienated from their professional schooling, like Laksha, that they refused to be interviewed.* (WS, B1, NWSAJ016020138)

Finally, contrary to what was expected, Engineering showed use of this structure in methodology, as demonstrated by the following sentence:

> *We observed all defects while concrete was poured, and believe that all of them survived until they were covered with concrete.*

It is important to note that this instance is rare among the data that were analyzed.

4.3.2. Think: source, evaluated entity, and context

As Table 4.6 in the discussion of collocations shows, authors in Composition Studies explicitly attribute evaluation to the self by using "I" in every observed instance. Similarly, evaluation is personalized in the Women's Studies texts that were analyzed, even when evaluation is attributed to the self as a part of the community. In Engineering, authorial

evaluation is observed occurring passively and avoiding personalization in all of the observed cases (see Table 4.7 above).

Table 4.9 below shows that in all three of the disciplines in which this construction was observed, authors tended to evaluate materials, data, or outcomes of their research.

Table 4.9
Think:
Evaluated entities

	Methods, models, theories	Materials, data, outcomes	Participants, students	Previous studies, goals
Applied Linguistics	--	--	--	--
Composition Studies	4	16	4	--
Engineering	--	8.5	--	--
Women's Studies	4	8	4	--

The following sentence shows evaluation of methods, models, or theories:

It is crucial, I think, that this kind of curricular move be considered. (CS, T4, PED04020191)

The sentences below display evaluation of materials, data, or outcomes:

It is thought that, as the water existing on the surface of specimen S was very thin and had a weak electrolyte property, the remaining zinc could not produce the sacrificial effect and could not protect the steel beneath the zinc. (EN, T2, MatEn01601001)

Finally, the sentence below demonstrates evaluation of participants or students:

Even now, I think that they must have been teasing me. (WS, T2, SIGNS0290401041)

Similarly to those containing *believe*, constructions containing *think* appeared in discussions and conclusions in Composition Studies and Women's Studies and in methodology sections in Engineering. Of the two examples below, the first shows evaluation occurring during discussion, and the second shows evaluation occurring during the reporting of methodology:

I think that most students are experts at reading their professors for our biases and beliefs, even without the clues we offer through our comments and by including class materials that billboard our interests. (CS, T3, PED04020191)

It is thought that specimens U and C are covered with the dense, adhesive layer of Zn4C03(OH)6 that exhibits good corrosion resistances, whereas, ZnO in specimens S and L exhibits poor corrosion resistance. (EN, T1, MatEn01601001)

While the number of instances of *think* may be too small to compare or contrast evaluated entities, it seems reasonable to speculate that with regard to source and context, *think* is used similarly to *believe*, but less frequently.

4.4. Relationship between frequency, function and knowledge production in the disciplines

The variation discussed above provides considerable material for speculation regarding the extent to which these linguistic structures reflect tacit or explicit endorsement of particular epistemological ideologies, at least within the context of the formal disciplinary communication contained in academic journals. Of particular interest is a comparison of the percentages of texts in each disciplinary corpus which displayed use of authorial evaluative *that* statements using *think* or *believe*, as shown in Table 4.10 below.

Table 4.10
Distribution by discipline

	% of texts
Applied Linguistics	16.2%
Composition Studies	46.8%
Engineering	17.1%
Women's Studies	10.3%

Composition Studies shows a strikingly higher percentage of texts containing these structures than all three of the three other disciplines under investigation. In fact, these structures may be considered especially rare in the Women's Studies corpus. Moreover, they seem to be avoided for the most part in Applied Linguistics and Engineering. But with nearly half of all of the analyzed texts containing at least one of these structures,

Composition Studies texts frequently employ authorial evaluative *that* using the mental verbs *think* and *believe*. If this is so, the results may be loosely plotted on the interpretive frame discussed in Chapter Three, with Composition Studies described as occupying quadrant A, and the other disciplines in quadrants B and D.

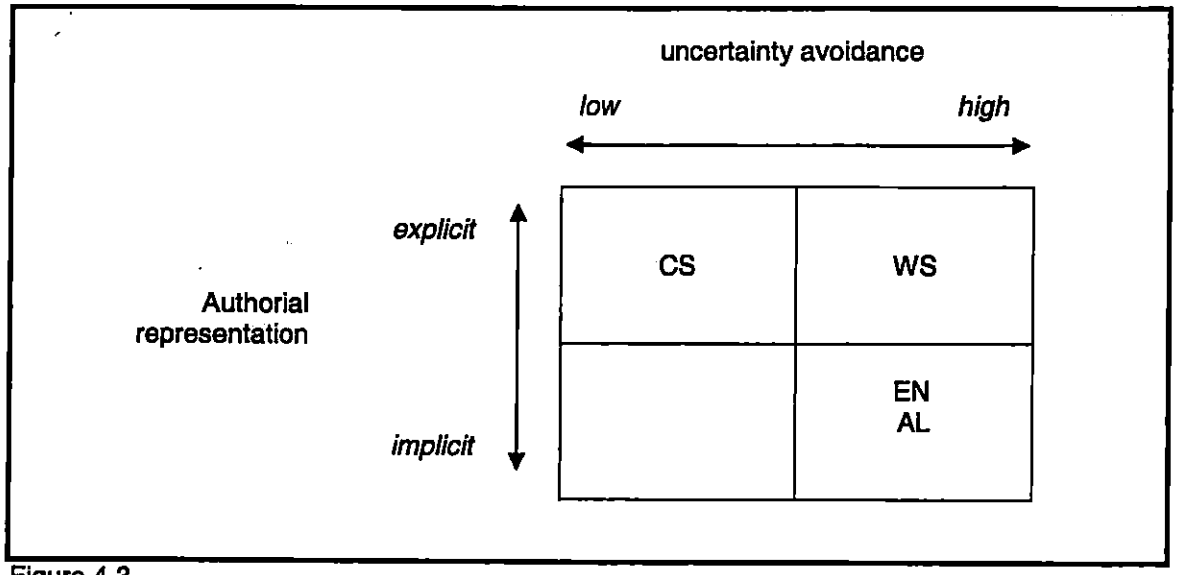

Figure 4.3
Findings plotted on interpretive framework

The subject collocates in evaluative *that* statement using both *think* and *believe* from Composition Studies show explicit authorial representation (see Tables 4.4 and 4.6) , and the relatively high frequency of these structures, 96.57 in one million words, in 46.8% of journal articles, suggest low uncertainty avoidance. The findings from Engineering, on the other hand (42.61/million 17.1% of journal articles), suggest a higher level of uncertainty avoidance and implicit or avoided authorial representation through these structures (see Tables 4.5 and 4.7). When authorial intrusion occurs in the form of evaluative *that* statements using *think* and *believe* in Applied Linguistics (22.28/million, 16.2% of articles), authors may be somewhat more explicit about their intrusion (see Tables 4.4 and 4.5), yet the frequency of these structures across texts is extremely low, suggesting high uncertainty

avoidance. Finally, in the case of Women's Studies (44.51/million, 10.3% of articles), when authorial intrusion using these structures occurs, it is carried out quite explicitly (see Tables 4.4 and 4.6), but its frequency is quite low across the texts examined, suggesting low uncertainty avoidance, at least as reflected by these structures in most of these texts.

The results plotted on Figure 4.3 attempt to address the question of whether observed variation reflects each discourse community's mode of knowledge construction. Yet the question itself poses problems as it seems to require a unified, static discourse community and an equally static epistemology for each community. For example, as rhetorician Carl Herndl (1991) has suggested, "the reflexivity of postmodern ethnographic theory conflicts with the demands of a professional, institutional practice" (p. 321). Perhaps these results capture instead a moment in each discipline's evolving discourse—a moment complete with both preferred linguistic prescriptions and linguistic choices which contest those norms, challenging traditional notions of research, the traditional role of the researcher, and the traditional style of representation of data, subjects, and researcher position in the research article. Such speculations could be empirically tested through a data-driven historical study of academic writing in these disciplines.

Given that all of the instances of authorial evaluative *that* statements using *think* and *believe* in Composition Studies were characterized by active voice with personal pronoun collocates, Herndl's view about the centrality of reflexivity may be shared among many researchers in the discourse community of Composition Studies. Still, other language theorists, such as Davida Charney (1996), make the case for objectivity in the traditional positivistic research paradigm and accompanying research article, claiming that "the very qualities that the critics most object to in scientific work are those that afford the most

productive discussion" (p. 569). Charney continues, arguing that "by disparaging objective methods and advocating increasingly subjectivist methods, we may also be impairing our ability to improve our own work and use it to promote social justice" (p. 569).

In advocating empiricism as a force that can counter social injustice, Charney challenges feminist critiques of "inherent sexism" (Blyler, 1995, p. 289 qtd in Charney, 1996, p. 571) in scientific objectivity, noting that "sexism and other injustices have often been most effectively exposed by quantitative studies" (p. 572). Perhaps the facility of "the master's tools" has offered some researchers in Women's Studies, perhaps especially those originally trained in scientific discourse, an effective choice in speaking as a disciplinary community and to their wider social concerns. Interestingly, community is suggested in the phrase "many of us think that," which implicates not only writer but also reader, both as a part of a broader community with a common goal. An evaluation that implicates the reader in this way may be powerfully persuasive given the disciplinary project of activism in Women's Studies.

Furthermore, Charney's argument that empirical methods foster community action may be seen in the depersonalized, passive voice present in the Engineering texts. Like Women's Studies, community is implicated, but in a contrasting way. In Engineering, the trend appears to be toward establishing distance between the self and evaluations, as evidenced by the higher frequency of the depersonalized, passive structures using "it" in these texts as a subject placeholder. This tendency in Engineering may suggest that researchers may view themselves not as producers but as servants of knowledge. On the other hand, such a characterization might fall short of recognizing the social dynamics of knowledge production in this field. Examining her findings in light of these social dynamics,

Martínez (2001) gives two reasonable interpretations for this tendency which draw on research of scientific discourse. First, she asserts that "impersonal structures evolved to fulfill the purposes of science" (Halliday and Martin, 1993, paraphrased in Martínez, 2001, p. 242). She further interprets her findings pragmatically, suggesting that "the use of impersonal structures has been interpreted as a negative politeness strategy, allowing authors to challenge others' statements or to avoid attribution" (Myers, 1989 paraphrased in Martínez, 2001, p. 242).

These interpretations, as well as the assertion by Martínez (2001) that such linguistic structures allow researchers to emphasize their findings over their role in the process of research, suit the results of this study as well. It is important to note that in this case the extraposed construction does not require a logical subject for meaning to be understood. In making this choice, the writers convey a sense of depersonalization. These findings may provide evidence of individual writers deferring to the norms of their academic community *in service to their community* by maintaining depersonalized academic voice even when making evaluations. General textual conventions of the scientific research article suggest that "the *passive voice* is usually used when a human agent (the experimenter) is manipulating the materials" (Weissberg and Buker, 1990, p. 128). In making these choices, perhaps writers are speaking to their community in the accepted form of persuasive language of their peers, the language of objectivity; for implicit in these impersonal statements seem to be claims about objectivity, generalizability, and validity, all important values to scientific communities.

Within disciplines, varied disciplinary projects divide communities into sub-communities with different goals and different language used to accomplish those goals.

These disciplinary projects are embodied in academic journals. In Applied Linguistics, for example, such disciplinary projects as computer-assisted language learning (CALL), ESL pedagogy, and English for Specific Purposes are represented. It may be speculated that some of the variation in this corpus may be a function of these disciplinary projects and their constituent communities. For example, the case of the passive, depersonalized structure using "it" was observed in the journal Language Learning and Technology, an online journal with a presumably technologically oriented audience.

Regardless of the expectations of their discourse communities, writers must make choices about how often, when, and in what way to evaluate. Researchers are in the position of interpreting, of making judgments, and of evaluating their findings, thus, evaluation of materials, data, and outcomes is unavoidable. Given that it is the nature of scholars to offer and dispute competing methods, models, and theories, it seems reasonable that writers would need to rationalize their choices, whether those choices display a rhetoric of "impersonal objectivity" or one of "reflexive awareness" (Hyland, 1999, p. 100). Authorial evaluative *that* statements with the mental verbs *think* and *believe* offer linguistic tools to carry out these evaluations, conveying belief and thought by presenting the self in their writing in ways that are stylistically appropriate to their disciplines.

CHAPTER 5. CONCLUSION

The purpose of this study was to identify the frequency and function of authorial evaluative *that* statements containing the mental verbs *think* and *believe* in research articles across four academic disciplines in order to provide evidence that would lead to principled discussion about knowledge construction in these disciplines. As such, this study contributes to present understanding of the linguistic conventions used to report on research in these disciplines and to the discussion of how disciplinary epistemologies are instantiated in academic writing. This chapter will return to the research questions which were used to guide this study and summarize the findings presented in Chapter Four, discuss limitations of the present study, and offer implications of this study for both teachers and researchers in the areas of Applied Linguistics and Rhetoric and Composition.

5.1. Research questions and overview of the results

In light of the findings discussed in the previous chapter, the research questions are reviewed here and the results are summarized:

Research Question 1

a) With what frequency do writers use the mental verbs *think* and *believe* in authorial evaluative *that* statements in a corpus of research articles from Applied Linguistics, Composition Studies, Engineering, and Women's Studies?

b) Which subjects commonly collocate with these verbs?

The frequency counts reveal clear differences among the disciplines in the use of *think* and *believe* in authorial evaluative *that* statements, although these structures are not extremely frequent in any of the disciplines at fewer than 100 times per million words in each

collection of texts. Composition Studies shows the highest frequencies of these two verbs combined, at 96.57 times per one million words, followed by Women's Studies at 44.51/million, Engineering at 42.61/million, and Applied Linguistics at 22.28/million. In all of the disciplines, *believe* occurred more frequently than *think*, which occurs rarely in Applied Linguistics, Engineering, and Women's Studies. *Believe* occurred most commonly in Composition Studies at 72.43 times per one million words, followed by Engineering at 34.10/million, Women's Studies at 28.32/million, and Applied Linguistics at 22.28/million. In Composition Studies, *think* occurred 24.14 times per one million words, followed by Women's Studies at 16.19/million, and Engineering at 8.53/million. *Think* did not occur in authorial evaluative *that* structures in Applied Linguistics.

Personal pronouns were overwhelmingly the most frequent collocates preceding these two mental verbs in authorial evaluative *that* statements, yet the disciplines showed some variation in this respect, with Engineering and occasionally Applied Linguistics displaying passive structures with the subject placeholder "it." In Composition Studies and Women's Studies, all authorial evaluative *that* statements containing both *think* and *believe* displayed personal pronoun use. Applied Linguistics generally displayed the use of personal pronouns but occasionally showed use of passives structure with the subject placeholder "it." Engineering showed rare use of personal pronouns; in fact, first person singular pronouns do not appear in this collection, while the use of first person plural pronouns occurs rarely. In fact, Engineering displayed the use of the noun phrase "the writers" twice as frequently as personal pronouns. Most striking in Engineering was the tendency toward passive structures using "it," which occurred nearly three times as often as the other subjects used in this discipline.

Research Question 2

a) What patterns of variation appear within and across the disciplines with regard to source of evaluation, evaluated entity, and context?

b) What might variation in frequency and function suggest about knowledge production in each discipline?

While the authors of these texts tended to refer to themselves in the first person as individuals or groups in the super-ordinate clauses of this structure, the self is occasionally obscured even when authors are clearly making claims that could be attributed only to themselves. The most common evaluated entities include methods, models, or theories, materials, data, or outcomes, and participants. While three of these disciplines evaluated methods, models, and theories as often or more often than the other categories, Engineering texts displayed evaluation of materials, data, and outcomes four times as often as evaluation of methods, models, and theories. Evaluation of participants/students was less frequent in Composition Studies and Applied Linguistics but as frequent as evaluation of methods, models, and theories in Women's Studies. Composition Studies was the only discipline that displayed evaluation of previous studies and goals.

It may be speculated that the apparent variation in frequency and function reflects each disciplinary community's own preferred and contested modes of knowledge construction. The texts chosen from Composition Studies displayed the use of authorial evaluative *that* statements with *think* and *believe* more than twice as often as Engineering and Applied Linguistics and four times as often as Women's Studies. When the results of the frequency and function of these structures were considered on continua of authorial representation (from explicit to implicit) and uncertainty avoidance (from low to high), the

results from Composition Studies suggested low uncertainty avoidance and explicit authorial representation. Given that the field of Rhetoric so often concerns itself with the realm of the subjective and uncertain, these findings may be said to reflect this discipline's epistemology. By contrast, the findings in Engineering demonstrate high uncertainty avoidance and implicit authorial representation, which seems to illustrate the notion that impersonality, objectivity, and certainty is valued in these disciplinary communities. Similarly, Applied Linguistics showed high uncertainty avoidance but somewhat more explicit authorial representation. Interestingly, the findings from Women's Studies with regard to the linguistic structures under examination suggest somewhat high uncertainty avoidance but explicit authorial representation. Perhaps the position of Women's Studies as a multi-disciplinary field to which researchers from several disciplines contribute leads to this effect.

5.2. Limitations

The present study examines texts from research articles, a genre for which certain disciplines, and perhaps some journal editors, require researchers to adhere to standardized forms and prescribed structures in their written discourse. While the journals were chosen to represent these disciplines, neither the journals nor the texts that were selected provide a complete picture of each discipline; however, it can be safely said that the journals and texts are representative of the disciplines under scrutiny for the purposes of this study and are sufficient for observing tendencies in these disciplines. Furthermore, given that the articles are published after having undergone revisions likely based on the suggestions of several readers, it is difficult to know to what extent the author's style has been influenced by the comments and expectations of others. Moreover, Bazerman (1994) cautions that "researchers often speak about their researches in ways that differ from the way they

formally write up their claims" (p. 105, paraphrasing Gilbert and Mulkay, 1984). He claims that "the real work of knowledge making is oral...[and] the formal publications are a secondary phenomenon of suspicious character, serving various social functions but not essential to knowledge production" (p. 105). Regardless of these concerns, written academic discourse as it appears in academic journals remains "an important research site" (p. 105) precisely because of the social functions which research articles serve.

5.3. Pedagogical implications and suggestions for further research

In her article "Will corpus linguistics revolutionize grammar teaching in the 21st century," Susan Conrad (2000) argues that late 20th century developments in corpus linguistics may radically transform present understanding of grammar and language teaching in the immediate future. Among her observations, she suggests that not only will English grammar become viewed not as a single entity but as a composite of registers, but instructor attention will subsequently move from correctness to purpose and context of use. The findings from this study, which reflect that discourse communities within academia differ with regard to this evaluative construction, add to the large body of work that underlies this shift.

For teachers in particular, this study provides empirical evidence that this type of evaluation is not extremely frequent in any of the disciplines, but occurs somewhat frequently in Composition Studies relative to the other disciplines and rarely in Applied Linguistics. This investigation provides specific examples of how these structures function and the contexts in which they are likely to appear, important findings for both teachers and writers who may wish to make their tacit awareness about effective research writing more explicit. In addition, the findings could prove especially useful for instructors working with

advanced students in these disciplines, particularly those in Composition Studies, who may wish to engage students in discussion about how reflexivity in text functions to acknowledge an understanding of disciplinary knowledge as thoroughly socially constructed.

Moreover, such explicit awareness of the choices available to writers could prove useful to instructors of research methodology classes, to those who teach academic writing to both native and non-native speakers, and to the graduate and undergraduate students who wish to become more familiar with the conventions of research articles in their fields. For example, Perales Escudero (2005) speculates that even within disciplines, different tasks may presume different uses of language. Such findings indicate that explicit awareness of how structures such as authorial evaluative *that* statements are used in different situations would be useful to students learning to write in their discipline.

Future research based on the findings of this study may take several forms. Because the policies of particular editors may influence the extent to which authors explicitly evaluate their claims, further inquiry could examine the editorial policies of the journals that were examined or interview the editors of these journals, inquiring as to their expectations of authorial representation and uncertainty avoidance in research writing. In addition, future inquiry may work under a definition of research genre that emphasizes formal aspects of research articles, examining writing from different research paradigms (narrative research, case-studies, quantitative experiments, critical essays) as the variable *among* the disciplines, ignoring disciplinary boundaries or treating discipline as an additional variable.

It is hoped that the findings of the present study open new avenues for inquiry into disciplines that have been examined less frequently by researchers using methodology from Applied Linguistics. In experimental research reports commonly found in disciplines such

Applied Linguistics and Engineering, several researchers and theorists have made strong cases that this type of discourse, often called scientific discourse, is rhetorical, even when the authors subscribe to the "windowpane" theory of language (Bazerman, 1988; Winsor, 1993; Bazerman, 1994). By contrast, writers in Composition Studies may readily acknowledge the necessity of positioning oneself explicitly in one's research (Herndl, 1991). Further inquiry could bring to light the ways in which this subjective positioning commonly occurs.

In light of the findings of this study, one important question remains. If it is often assumed that feminist writing transforms the adage *the personal is political* into *the personal is epistemological*, the findings of the present study may complicate popular notions about academic discourse in Women's Studies. The unique disciplinary, social, and institutional dynamics that impact discourse in Women's Studies provide an area rich with opportunities for inquiry. Much further research into the textual products of Women's Studies is needed to explore this multi-faceted discipline from the perspectives of Applied Linguistics and Rhetoric. Because researchers contribute to the field of Women's Studies from so many perspectives, from literary and cultural studies, the "hard" sciences, and the social sciences, additional inquiry could clarify the results of this study, contributing to present understanding of Women's Studies as a discipline. Such research could concentrate on Women's Studies in particular by examining a broader range of the many journals that represent this field. As a result, such research could expand present understanding of how writers who take a variety of approaches to research use evaluation to persuade their audiences, reflecting, contesting, and perpetuating disciplinary epistemologies.

Regardless of the direction future research takes, the present study has fulfilled its purpose of examining the use of the mental verbs *think* and *believe* in authorial evaluative

that statements across a corpus of four academic disciplines as indicative of these discourse communities' shared views of knowledge construction. The disciplines showed variation in both frequency and function of these structures. Cross-disciplinary variation occurred both in the ways that authors present themselves when they use evaluative *that* statements and in the entities the evaluated. While it can be inferred that the observed differences may reflect shared disciplinary attitudes toward the researcher's position in relation to knowledge construction, variation within the disciplines may suggest that writers within these disciplines continually negotiate, contest, and recreate the linguistic expectations of their communities.

APPENDIX A: INSTANCES OF "BELIEVE" BY DISCIPLINE

Applied Linguistics

Instance	Label	Sentence
B1	ESP2004313	We believe that a textlinguistic approach to the computerized analyses of corpora, as advocated by Biber, Conrad, and Reppen and Flowerdew (1998), is not only desirable but can be quite fruitful, particularly with specialized, genre-specific corpora.
B2	ESP2004313	Finally, as illustrated by the corpus used in this study, we believe that specialized, genre-specific corpora will continue to grow in importance not only for instructional purposes in academic settings but also in professional and business contexts.
B3	ESP2101081	We believed that such a relation did exist and those readers who made use of the rhetorical resources of the text would understand the text better.
B4	ESP2101081	We believe that this result is related to the readers' familiarity with the organizational type and their identification of that type.
B5	Led1401027	However, we believe that what we have said here concerns education in general, not just "intercultural" education as some exotic form of exotic knowledge transference.
B6	LLTec00601100	Given that the experimental subjects had an ample opportunity to manipulate the target words and thus create a strong link between form and meaning, it was believed that they would retain the new vocabulary items better than the control group.
B7	LLTec00601123	However, I believe that this value indicates that further research might not be redundant.
B8	LLTec00701046	It was believed that the aggregate of scores for several items would be more reliable than an individual's score for a single item.
B9	TQ038040573	I also believe that academic discourse socialization is a locally situated interactional process rather than an autonomous assimilation to broader disciplinary cultures (Casanave, 1995; Prior, 1998).

Composition Studies

Instance	Label	Sentence
B1	C&C0210105	In that role, I came to appreciate the concept of design and methodology. I believe that those same intelligent principles of design methodology are significant still.
B2	C&C0210197	I believe that the unpacking and reflecting upon a conflict that happened in CMC still needs to take place ftf rather than online.
B3	C&C021030341	I believe that there is, one that imagines instructors and students (LGBT and otherwise) as political actors engaging not LGBT issues but issues important to all citizens in a democracy, and in ways that acknowledge their complexities while avoiding simplified pro and con debates.
B4	CCC055030439	I believe that, in general, a writing course grounded in the methodologicaland theoretical principles of CDA needs to accomplish two things: first, introduce students to the methods of CDA in a way that is compatible with their interests and level of academic preparation, and, second, confront students with the challenge of not

		just entering and changing but constructing public forums through and for their writing.
B5	CCC055030536	It is this ethical dimension of literacy in classroom practice that an ethics of difference does not adequately address, and it is this sense, I believe, that Ewald intended when she argued in 1993 that composition studies as a fieldwas "waiting for answerability."
B6	CCC055040693	Of course the hiring committee and I would have been mistaken to believe that my presence alone would dissolve excuses for why it couldn't be done, why other black males from the ghetto can't do well in school.
B7	CCC055040693	This leads me to believe that there is an understudied group of black boys who are gay and/or effeminate who don't do any better in school than their macho counterparts.
B8	CCC055040693	I believe that Delpit is right.
B9	PED0401065	If we believe that multiculturalism has a "natural" or even a wellconstructed fit with composition-rhetoric, we need to begin to design programs—with help from multicultural consultants outside our field, if necessary—to educate future teachers in multiculturalist pedagogies.
B10	PED041093	Like Joy Harjo (1997: 31), I believe that "the literature of the aboriginal people of North America defines America."
B11	PED041093	Like Louis Owens (1998: 46–47) I believe that "it is our responsibility, as teachers and writers, to make sure that our texts and our classrooms are not 'safe' spaces from which a reader or student may return unchanged or unthreatened. . . . It is our job . . . to make people listen well, to disrupt the discourse of dominance, to challenge and discomfit the reader, to ultimately startle that reader into real knowledge."
B12	PED041093	I mention this fact because I believe that this commonality between myself and my students gives me insight into their objections and assists me in addressing their fears and concerns in respectful yet challenging ways.
B13	PED041093	Like Cajete (2000:281) I believe that this Judeo-Christian cosmology, as generally interpreted, is "dysfunctional . . . [and] can no longer sustain us at any level."
B14	PED04020191	I do not believe that if my students understood what discourses like PC obscure from view and the implications they hold for their lives they would easily embrace them.
B15	PED04020215	We believe that the classroom space opened by rupture might serve as a transitional space.
B16	PED04020241	I believe that the diary's marginal canonical status, along with Plath's reputation as an extremely narcissistic confessional poet, prompted several reviewers to dismiss *Unabridged Journals*.
B17	PED04020263	I fully believe that students can imaginatively add to their life experience through careful and engaged reading, but not through "identifying with" either the imagined speaker or the actual writer.
B18	PED04030401	I believe that critical work *is* personal and rhetorical, emerging to alter the perspectives and locations of individual people.

Engineering

Instance	Label	Sentence
B1	GeoEn13001014	There are three free-®eld locations for each test and it is believed

		that these three settlement values will provide a bound for the relative densities.
B2	GeoEn129121128	We observed all defects while concrete was poured, and believe that all of them survived until they were covered with concrete.
B3	GeoEn129121128	It is believed that these reports are false positives, particularly considering that poor quality concrete was reported by various participants at differing locations.
B4	MatEn01506545	The writers believe that these measurements are still valuable, because ~1! many building designers rely on published statistical air-temperature data for regions of interest to calculate the range of expected movements; and ~2! the duration and number of measurement are suf®cient to describe a movement trend.
B5	TranE13001049	Although the writers believe that peakperiod assignments provide more meaningful results for both evaluation and design, the ®ndings of this case study should be applicable to both hourly and daily assignments.
B6	TranE13001068	It is believed that, due to the stochastic nature of simulation models, one simulation run may produce signi®cantly different results, depending on the random number of seeds used.
B7	TranE13001076	It is believed that the main reason for the large differences in delay estimates between the SIDRA model and ®eld data is the difference in the behavior between Jordanian and Australian drivers.
B8	TranE13001076	It is believed that the main reason for this is the difference in driver behavior between Jordanian and Australian drivers.

Women's Studies

Instance	Label	Sentence
B1	NWSAJ016020138	But I believe that most of the students who were aware that their professional school difficulties originated in their very self-identities tended to be so alienated from their professional schooling, like Laksha, that they refused to be interviewed.
B2	SIGNS0290401041	Although the consequent explosion in experimental ethnography is laudable, I believe that the emphasis on the ways in which "authority" is an effect of certain textual conventions misses Said's main point about the ways power produces truth and its subjects.
B3	SIGNS0290401041	Now I believe that to take her desires seriously would mean to see these objects--whether a baby or nylons--as means to form a relationship with me.
B4	SIGNS0290401041	I believe that through my relationship with Magdalena I was desperately seeking to restore personal relationships as the ends of my trip rather than the means.
B5	SIGNS0290401041	I believe that it is an embodied expression of this reciprocal seduction that defines the erotic economy of fieldwork.
B6	SIGNS0290401041	I believe that it is this ability to confound that characterizes Magdalena's power as it manifested itself in her ability to combine physical intimacy with a refusal to "participate in the process of analysis" (see n. 22), her ability to hold onto secrets even as she was taking off her clothing.
B7	SIGNS0290401041	Although Spivak suggested that "there is no space from which the sexed subaltern subject can speak" (1988, 307), I believe that such silence may signal not only the power of oppressive local and global practices and discourses but also the limits of such power.

APPENDIX B: INSTANCES OF "THINK" BY DISCIPLINE

Applied Linguistics

No results for think

Composition Studies

Instance	Label	Sentence
T1	CCC0560194	After reading Tate's narrative, and others like it, I actually began to think that my life as a non-gifted academic wasn't so bad after all. Being a late-bloomer, so to speak, may have its advantages.
T2	CCCC055040693	I'm not so pessimistic to think that the problem is hopeless.
T3	PED04020191	I think that most students are experts at reading their professors for our biases and beliefs, even without the clues we offer through our comments and by including class materials that billboard our interests.
T4	PED04020191	It is crucial, I think, that this kind of curricular move be considered.
T5	PED04030401	When I first read this draft, I remember thinking that it reminded me of something I might read from Annie Dillard or Loren Eisley—the focus on the surroundings and the animals, the mixing of fear and nature, the inclusion of the family story, the fantastic detail about the bicycle on a bridge that could trap its wheels.
T6	CCC055040693	However, the hiring committee and I both thought that if anyone could make helpful connections, then someone like me should be able to.

Engineering

Instance	Label	Sentence
T1	MatEn01601001	It is thought that specimens U and C are covered with the dense, adhesive layer of Zn4CO3(OH)6, that exhibits good corrosion resistances, whereas, ZnO in specimens S and L exhibits poor corrosion resistance.
T2	MatEn01601001	It is thought that, as the water existing on the surface of specimen S was very thin and had a weak electrolyte property, the remaining zinc could not produce the sacri®cial effect and could not protect the steel beneath the zinc.

Women's Studies

Instance	Label	Sentence
T1	NWSAJ0160101	Our foremothers presented equity as a primary goal, and many of us continue to think that equity for women is fundamental even as we work to factor gender considerations about real-life circumstances of women (especially family care) into the discussion (Davis 1996).
T2	SIGNS0290401041	Even now I sometimes think that they must have been teasing me.
T3	SIGNS0290401041	There were times that I thought that were I to marry a Shuar I might be able to work through, or around, my own ignorance.
T4	SIGNS0290401041	Indeed, there were moments when I thought that the only way I could continue working in the cenro would be by marrying someone.

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